

The mechatronic drive system
for completely new perspectives

MOVIGEAR®



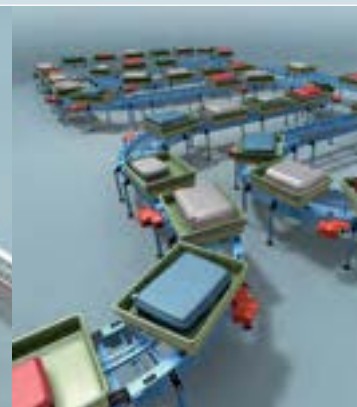
MOVIGEAR®: The new operating efficiency

Designers and operators of materials handling systems in many areas of logistics, such as the automotive, food and beverages industries, airport logistics or intralogistics, opt for drive solutions made by SEW-EURODRIVE. They choose innovative drive technology, highest product quality and consulting competence.

SEW-EURODRIVE offers a nearly unlimited selection of components and combination options for the implementation of countless individual applications. Perfectly matched drive components, including gearmotors, drive electronics and control options, are the heart of the materials handling system and ensure functionality and operating efficiency.

The latest in-house development of SEW-EURODRIVE is thus a logical consequence of our continuous development and research efforts especially in the field of decentralized drive technology. With MOVIGEAR®, the mechatronic drive system for horizontal materials handling technology, we set entirely new standards with respect to efficiency and functionality. MOVIGEAR®

does not only combine the gear unit with a motor and matching drive electronics within one product. Above all, it makes optimum use of all technical and economic advantages of these three drive components.



Functional, reliable and efficient

MOVIGEAR® at a glance

	MOVIGEAR® Single Line Installation
Sizes	MGF..2 with up to 200 Nm MGF..4 with up to 400 Nm
	Features
Pages 4+5	<ul style="list-style-type: none"> – High degree of reliability and long service life due to systematic development of all components – Compact design: Motor, gear unit and electronics are combined in one mechatronic drive system – High breakaway and starting torques – Reduced number of variants enables standardization and lower storage costs – Functional user software
Pages 6+7	<ul style="list-style-type: none"> – Reduction in energy costs due to high efficiency of all components (gear unit, motor, electronics)
Pages 8+9	<ul style="list-style-type: none"> – Low noise emissions due to intelligent control electronics and operation without fans (suitable for use in manual work stations) – Hygienic surface design for applications in the hygiene area – Air, dirt and germs are not spread – High degree of protection
Pages 10+11	<ul style="list-style-type: none"> – Principle of single line installation: Only one cable has to be installed for energy and information transfer



The new mechatronic drive system MOVIGEAR® reduces total costs and operating costs – also in your materials handling system.



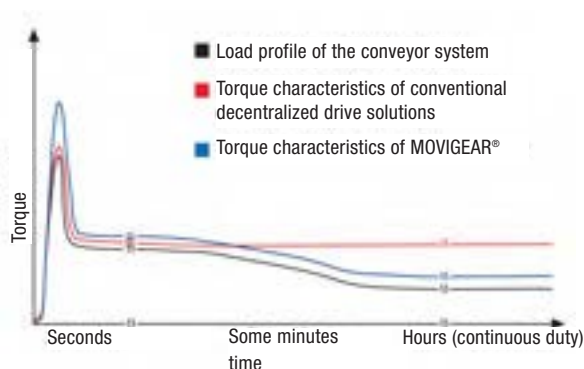
Meeting tomorrow's requirements today – with MOVIGEAR®

When demands placed on materials handling systems become ever higher and more specific, when installation space is limited as is so often the case, or when adverse ambient conditions prevail, while the economic expectations for the individual system components continue to increase, then it is time to resort to MOVIGEAR®. All components of MOVIGEAR® were developed simultaneously, always with the idea of an integrated system in mind.

Our engineers have taken a systematic development approach right from the design phase. The integration and coordination of all the drive components leads to a **long and reliable service life** and **high system availability**. Many horizontal materials handling applications require a higher torque during the startup phase to overcome static friction, to loosen dirt and sticky residue, and to distribute lubrication where necessary. As these issues are considered in the project planning, the utilization of conventional drive solutions in continuous duty is only between

50 and 60 %. MOVIGEAR®, however, provides a starting torque that is 3 to 4 times higher than the continuous torque. The drive unit can be dimensioned optimally to the continuous duty point. Nonetheless, **high breakaway and starting torques**, especially after long system downtimes, are mastered without any limitations. **The power required to drive the system can thus be reduced significantly.** Additional electrical elements, such as fuses, switches, power supplies, etc., can be rated smaller. By integrating all components in one housing,

a particularly compact construction was achieved for MOVIGEAR®, which makes it the ideal solution for **efficiently designed** materials handling systems. Depending of the components used previously and the mounting situation, MOVIGEAR® **reduces installation space by 20 – 25 %** compared to conventional decentralized solutions. The slip-on mounting design can easily be integrated in today's materials handling systems. It also enables **new developments to be implemented from a completely new perspective.**



Standardization and modularization

Advantages based on standardization and modularization have a positive effect on many different company areas. Costs can be saved, for example in the areas of development, planning, data processing, material planning, and logistics. The effect of reducing the number of variants on

the overall costs is often underestimated, or it could not be determined exactly on the basis of conventional calculation methods. Our engineers have taken a systematic development approach right from the design phase.

During the development stage of MOVIGEAR®, emphasis was placed on the customer-oriented **reduction of variants:**

- Large speed setting range for constant continuous torque replaces mechanical unit reduction ratios
- Universal installation in almost all mounting positions reduces the number of drive components

Development and design of standard materials handling systems with ready-made and tested standard modules is ensured. The power of the drive engineering components is optimized to suit the application.

Another advantage: MOVIGEAR® is an intelligent system with its own control concept. Its high-quality networking features help **reduce** the

startup time and **support** the **monitoring and maintenance tasks**. In connection with a functional user software for integration in higher-level Ethernet networks, drive tasks are solved quickly and easily, and **installation and startup costs are reduced.**



MOVIGEAR® combines the three core competencies of SEW-EURODRIVE in one mechatronic drive system: Gear unit, motor and drive electronics.



Greater energy efficiency for reduced energy and operating costs

Saving energy is not only an important contribution for protecting the environment, but it can also be measured financially. In many industries, such as the automotive, food and beverage industries, airport logistics or general transport logistics, the topic "Total Cost of Ownership (TCO)" is becoming increasingly more important. Already in the planning stage, energy efficiency has become a focal point of integrated approaches. This inevitably affects the development of modern drive technology as well, because the drive components used and their overall efficiency play a major role in this.

The German Electrical and Electronics Manufacturers' Association ZVEI calculated that electrically powered systems account for more than two thirds of the industrial power consumption.

A simple equation illustrates this:

$$P_{\text{Input}} = P_{\text{Output}} + P_{\text{Losses}}$$

This means that the costs for electrical energy input P_{Input} are calculated from the effectively needed mechanical energy P_{Output} plus losses P_{Losses} resulting from the overall efficiency. Irrespective of the type of application or system, energy costs can only be reduced if energy losses during plant operation are kept as low as possible.

This is why more and more system operators invest in the latest development from SEW-EURODRIVE. For them, the mechatronic drive system MOVIGEAR® is not only an investment in future-oriented and intelligent drive technology, but it also helps them to reduce energy costs immediately.

Take the motor efficiency of MOVIGEAR®, for example, which already today significantly exceeds efficiency class IE4 (Super Premium Efficiency), which is currently being discussed as a draft in the IEC. The overall efficiency of MOVIGEAR®, of gear unit, motor and drive electronics, is thus considerably greater than that of conventional drive solutions, contributing substantially to the reduction of energy losses during system operation.



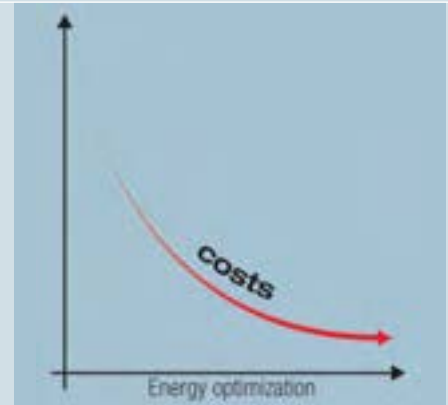
Using MOVIGEAR® is not only an active contribution to preserving resources and the environment, but also enables the system operator to save a substantial amount of costs.

The mechatronic drive system MOVIGEAR® achieves such a high total efficiency due to

- optimized interfaces between motor and gear unit,
- new motor concepts,
- new electronic components and intelligent control modes.

The **higher costs**, compared to conventional drive solutions, are **compensated within one or two years** only by the saved energy expenses.

Reducing energy costs by increasing overall efficiency



A current calculation example from a large bottling plant shows that the **total efficiency** of a drive solution **with MOVIGEAR®** is between **10 and up to 25 percentage points higher than that of conventional drive solutions**, depending on the used gear unit type and the

operating point. If the 105 frequency-controlled standard gearmotors in this application, with a power rating between 1.1 kW and 2.2 kW, were replaced by corresponding MOVIGEAR® units, the **energy costs could be reduced by 15 and 30 per cent on average**.

Further energy saving aspects:

- The energy efficiency of MOVIGEAR® makes a sustainable contribution to the reduction of CO₂ emissions and thus actively protects the environment.
- MOVIGEAR® significantly reduces the reactive power consumption compared to motors operated directly on the mains supply and thus helps to ensure that reactive power limit values are observed.



MOVIGEAR® minimizes drive losses

Solutions for sensitive areas

Low noise emissions improve the quality of the workplace

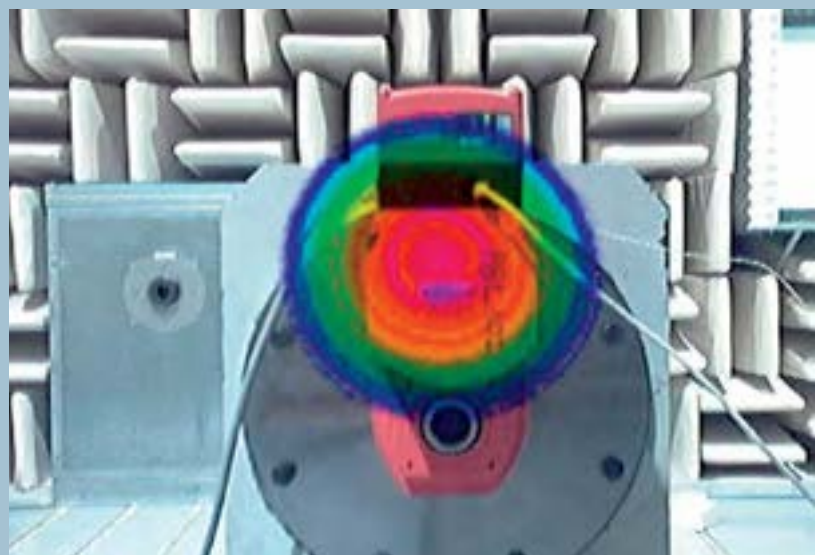
In addition to objectives such as “higher productivity” or “cost reduction”, the system environment is becoming a more and more important criterion for the development of modern machines and systems. Until now, compliance with normative limit values served as gage for environmental impact for system operators. However, the creation of high-quality workplaces has become one of the key purchase criteria. This is why influences on the system environment, e.g. noise emission, are thoroughly analyzed.

This is why influences on the system environment, e.g. noise emission, are thoroughly analyzed. These tests showed that in many drives, sound emission was caused by mechanical or electrical excitation, emitted via the housing surface, for example, and it was audible or measurable as noise.

During the development of MOVIGEAR®, SEW-EURODRIVE has employed state-of-the-art technologies. Pictures taken with an acoustic camera in a special sound measurement room were analyzed in detail. All test results had a direct impact on the housing design, which

minimizes the development of noise emissions. The design without fan also reduces noise, since in conventional drives, a considerable amount of noise is created by air swirls and vibrations of the fan guard.

Picture taken with
acoustic camera in sound
measurement room



Hygienic Design for more product quality

Each end user is grateful to know that high demands are made concerning hygiene in all so-called "sensitive production areas." This applies to employees as well as to all machines and systems involved. This approach is the only way to ensure that contaminated food products, cosmetics or drugs do not enter the market. That is particularly important for certain branches of industry, such as the beverage and food industry

as well as the chemical and pharmaceutical industry. Often, regulations stipulate a completely germ-free environment.

The drive solutions used in the past made it very hard to clean the production systems as thoroughly as required. Standard drives often come equipped with cooling fins in which dirt can accumulate, and germs and bacteria may be distributed via air swirls.

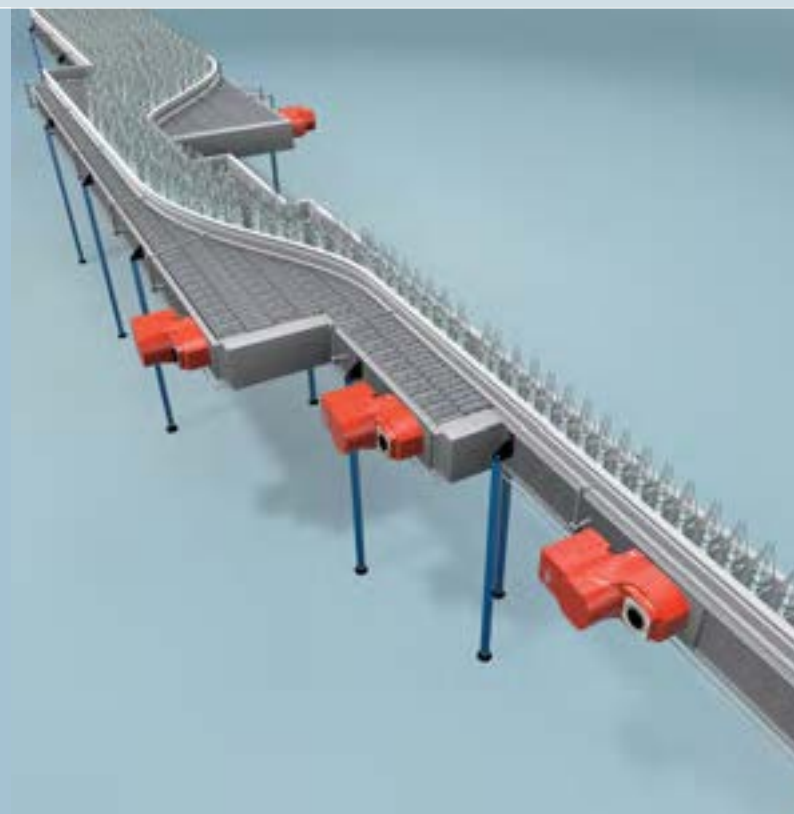
This is where MOVIGEAR® with its smooth surface design comes in. The geometric design of **MOVIGEAR®** has complied with the **Hygienic Design guidelines** already during the design stage. This minimizes cleaning efforts, which

leads to reduced cleaning and system downtimes and ultimately to reduced operating costs.

The smooth surface design prevents the built-up of dirt; the units are virtually self-cleaning.

The totally closed mechantronic drive system applies the principle of surface cooling, **dispensing with additional fans**. Sucking in dirt and spreading germs and bacteria due to **air swirls are a thing of the past**. The **high degree of protection** ensures maximum reliability. And should it become necessary after all to replace the electronics, the upper part with the electronics can be separated from the connection part quickly and easily. Replacing the electronics part takes only a few minutes. Connection cables do not have to be removed, making for maximum system availability.

Thanks to these features, it is very easy to apply a decentralized installation philosophy even to sensitive production areas without additional effort for the cleaning of drive components.



Only one cable has to be installed for energy and information transfer

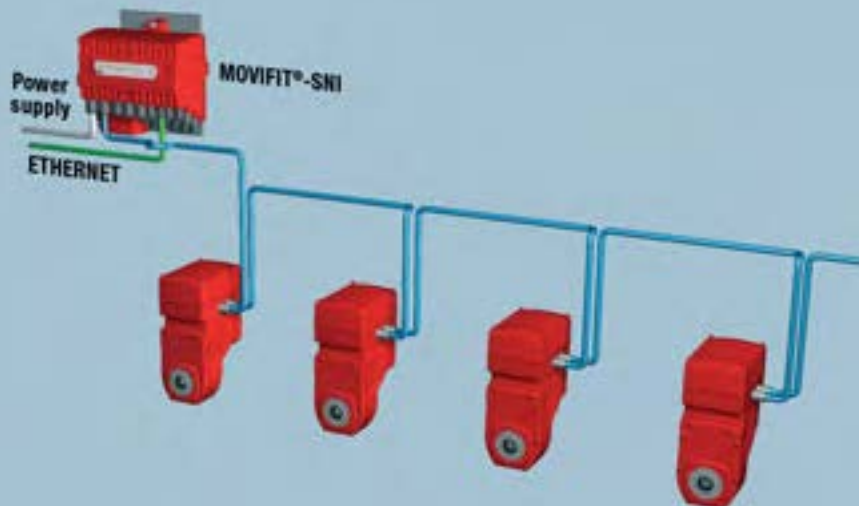
According to the present technological standard, decentralized system topologies require two or even three separate cable lines for power supply, 24 V supply and communication. The installation and wiring workload is extremely high. Installation costs are further increased by the search for wiring errors.

Principle of single line installation

MOVIGEAR® SNI

Single Line Network Installation

- Individual control of MOVIGEAR® with bidirectional communication
- Reduction in the number of variants and components
- Network topology
- Bus lines do not have to be routed in the field
- No risk of hidden faults in the bus cabling
- Reduced startup times
- Shorter project runtimes/lower project costs



With MOVIGEAR®, completely new system concepts can be implemented, since energy and data are transferred via one standard cable. This principle is called **Single Line Installation**. Simplified installation leads to significantly **reduced installation and system costs**.

The system operator can pre-install complete system modules and test them separately from each other. Complex and cost-intensive installation on-site is no longer necessary. Startup times are reduced from weeks and months nowadays to a minimum of a few days.



MOVIGEAR®:
with optional digital
inputs and outputs

